

*REMARKS**The Office Action*

The Office Action sets forth the following grounds for rejection: (1) claims 1-9, 13, and 21-25 are rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Umeda et al. (JP 05-127402 A); (2) claims 1-2, 9-12, 14-15, 19, 21-28, and 31-37 are rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Kunita et al. (US 2001/0009129) in view of Kinsho et al. (USP 5,837,785); (3) claims 16 and 17 are rejected under 35 U.S.C. 103(a), as allegedly unpatentable over Kunita et al. and Kinsho et al. and further in view of AAPA; and (4) claims 7, 8, 13, 29, and 30 are rejected under 35 U.S.C. 103(a), as allegedly unpatentable over Kunita et al. and Kinsho et al., and further in view of Umeda et al.

Examiner Interview

Applicants wish to thank Examiner Joshua D. Zimmerman for the courtesies extended to Xavier Pillai, one of applicants' attorneys, during the telephone interview held on February 15, 2007 to discuss the Office Action. The Examiner agreed that the anticipation rejection over Umeda et al. may be considered withdrawn in view of applicants' clarification on the nature of disclosure of the reference. No agreement was reached on the obviousness rejections.

Discussion of Rejections

1. Anticipation Rejection

Applicants respectfully traverse the anticipation rejection of claims 1-9, 13, and 21-25. Umeda et al. fails to disclose a polymer. The Office states that Umeda et al discloses a polymer identified by II-105 and II-127. As discussed during the Examiner Interview, the Office is in error.

Applicants previously responded to this rejection stating that the compounds referred to by the Office are not polymers. At page 14 of the Office Action, the Office contends that "the subscripts of those compounds cited, indicating a repeating unit" and that "therefore the compounds cited are polymers". Again, the Office is in error.

In addition to the arguments presented previously, applicants provide the following. Firstly, the subscripts of the compound "II-105" are 16 and 33 in the group $-C_{16}H_{33}(n)$. It is evident for the skilled person that these subscripts have nothing to do with the number of repeating units of a polymer, but indicate the number of the carbon and hydrogen atoms in the alkyl group; in addition, the symbol "(n)" indicates "normal", meaning that this alkyl group is a linear, not branched alkyl group.

During the Examiner Interview, a question was asked whether "(n)" as found in II-105 represents that the compound is a polymer. The answer is No. It is clear to those of ordinary skill in the art that (n) as presented in II-105 cannot and does not represent the number of repeating units. It is true that in polymer chemistry literature, the letter "n" is used to represent the number of repeating units but it is used in a different way. For example, for the purpose of illustration, to represent a polymer such as polyethylene, the formula is written as $-(CH_2CH_2)_n-$. Note how "n" is used here. It is used as a subscript outside of the brackets encompassing the repeating unit CH_2CH_2 .

In compound "II-127" a reference to "subscript" might relate to the subscript in $-CH_3$ (i.e., methyl group) or in $-C_4H_9$ (butyl group). Here, subscripts 3, 4, and 9 cannot be related to a number of repeating units of a polymer. On the contrary, subscripts 3 and 9 refer to the number of hydrogen atoms in methyl and butyl groups, and subscript 4 refers to the number of carbon atoms in the butyl group. It is known to those skilled in the art that the number of the carbon atoms and hydrogen atoms is given by the general formula of $-C_nH_{2n+1}$ for an alkyl group. The symbol "(t)", as those of skill in the art would know, stands for "tertiary", meaning that there are 3 substituents on the carbon, as in $(CH_3)_3C-$.

Secondly, even if these subscripts indicate a repeating unit, which applicants completely and fully deny, the repeating unit in this antioxidant is not a *phenolic* monomeric unit, because the hydroquinone structure cannot be interpreted as being part of the repeating unit.

Thirdly, Umeda et al. describes the antioxidants as low molecular weight compounds and there is nothing mentioned in the cited reference about a polymeric structure of these antioxidants.

In view of all of the foregoing, applicants respectfully request the removal of the anticipation rejection.

2. Obviousness Rejections

Claims 1-6, 9-12, 14-15, 19, 21-28 and 31-37 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Kunita et al. in view of Kinsho et al. Claims 16 and 17 are rejected as allegedly unpatentable over Kunita et al. and Kinsho et al. and further in view of the alleged AAPA. Claims 7, 8, 13, 29, and 30 are rejected as allegedly unpatentable over Kunita et al. and Kinsho et al. and further in view of Umeda et al.

To establish a *prima facie* case for obviousness, the Office must satisfy *three* requirements: (1) the prior art reference or combination of references must teach or suggest *all the limitations* of the claims. See *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (“All words in a claim must be considered in judging the patentability of that claim against the prior art.”); (2) the prior art relied upon must contain some suggestion or incentive, coupled with knowledge generally available in the art at the time of the invention, that would have motivated those of ordinary skill in the art to modify a reference or combine the references. See, *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1385, 58 USPQ2d 1286, 1293 (Fed. Cir. 2001) (“in holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in a way that would produce the claimed invention.”); and (3) the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. In other words, hindsight analysis is not allowed. See *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991) (“While the idea of using a monkey gene to probe for a homologous human gene may have been obvious to try, many pitfalls existed that would have eliminated a reasonable expectation of successfully obtaining the EPO gene. Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious.”). Applicants respectfully submit that the Office failed to make a *prima facie* case for obviousness, as discussed below.

The Office has failed to show that the cited references suggest to those of ordinary skill in the art the presently claimed invention where the group $-S-(L)_k-Q$ is covalently bound *on a carbon atom of the phenyl group of the phenolic monomeric unit*. The Office Action admits that “Kunita fails to disclose that the polymer comprises a phenolic monomeric unit wherein the phenyl group of the phenolic monomeric unit is substituted by the specified group [i.e. the group $-S-(L)_k-Q$] and that wherein S is covalently bound to a carbon atom of the phenyl group.” (Response to Arguments in Office Action, page 15 lines 2-3).

In the previous Office Action, the Office argued that the attachment of a heterocyclic group to the main chain or the side chain of the polymer by an appropriate linking chain, including S and thioethers. However, this argument fails to make a prima facie case for making obvious the claimed invention including the claim element that the substituting group $-S-(L)_k-Q$ is covalently bound to *a carbon atom of the phenyl group*.

There are different positions in a novolac resin to bind this substituting group but in the present invention only *on a carbon atom of the phenyl group of the phenolic monomeric unit is selected*. This position of this substituting group is neither disclosed nor suggested in Kunita et al., either alone or in combination with Kinsho et al.

The position of this substituting group is also not disclosed in Kinsho et al. because “the heterocyclic-containing compounds having ... novolac backbone chains” are represented by the general formula (9) and in this “formula (9)” the group “Q” is bound on the oxygen atom of the phenolic monomeric unit and *not on a carbon atom of the phenyl group of the phenolic monomeric unit* (see Kinsho et al., column 2 lines 41-45, column 3 line 5 (for formula 9), and column 5 lines 57-column 6 line 4). There is no structural similarity between the two different types of structures.

In the presently claimed invention, the position of the substituting group on a carbon atom of the phenyl group of the phenolic monomeric unit is a very important feature as indicated on page 4 lines 13-22 of the present invention. The prior art teaches substitution on the hydroxyl groups, i.e., through the oxygen atoms. This leads to a decrease in the number of free hydroxyl groups on the polymer and thereby reduces the solubility of the coating in the alkaline developer. In contrast, the modification reaction proposed in the present

invention enables to increase the chemical resistance of the coating without substantially reducing the developability of the coating.

There is no suggestion in the cited references to motivate those of ordinary skill in the art to make the claimed modification (i.e., substituting on the carbon rather than on the oxygen). Any motivation should only come from the blinding glare of extreme hindsight which is totally impermissible under the law.

Applicants respectfully submit that if the Office continues to reject the claims, such a rejection would be based on an unmistakable case of hindsight reconstruction and a strained effort to arrive at the claimed invention by picking and choosing the required components from the prior art using the presently claimed invention as a roadmap and then adding some of its own imagination. It is well established that such hindsight reconstruction is impermissible. Using the applicants' disclosure as a blueprint to reconstruct the claimed invention from isolated pieces of the prior art contravenes the statutory mandate of Section 103 which requires judging obviousness at the point in time when the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

In view of the foregoing, the obviousness rejections are erroneous and should be withdrawn. Further, as discussed, Umeda et al. fails to disclose or suggest polymers. Accordingly, applicants respectfully submit that all obviousness rejections are erroneous and should be removed.

Conclusion

A favorable decision is solicited. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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